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ABSTRACT

The curriculum guide outlines a course designed to acquaint the student with basic skills needed in reading, sketching, and drafting building construction plans. Students should show an interest in the carpentry trade before being assigned to this course, which is the first in a series. Emphasis is placed on the actual responsibilities of the carpenter as he relates to the drawing being developed. However, the ability of each student should be considered. As the content of the course varies, the teacher must adjust techniques to the situation. Course goals, specific block objectives, and course outlines are presented for the following 12 instructional blocks: orientation; safety; human relations; history and ethics of the trade; introduction to building construction; types of plans; basic drawing; applied mathematics; kinds of buildings; proposal drawings; working drawings; and the Quinmester posttest. A bibliography and sample of the Quinmester posttest are appended. (Author/NH)

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AUTHORIZED COURSE OF INSTRUCTION FOR THE QUINMESTER PROGRAM

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Course Outline

CARPENTRY - 9163
(Building Construction Plans)

Department 48 - Quin 901889

DADE COUNTY PUBLIC SCHOOLS
DIVISION OF INSTRUCTION • 1974

CE003 212

D A D E C O U N T Y P U B L I C S C H O O L S

1 4 5 0 N O R T H E A S T S E C O N D A V E N U E

M I A M I, F L O R I D A 33132

Course Outline

CARPENTRY - 9163
(Building Construction Plans)

Department 48 - Quin 901889

county office of

VOCATIONAL AND ADULT EDUCATION

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Dr. E. L. Whigham, Superintendent of Schools
Dade County Public Schools
Miami, Florida 33132

October 9, 1974

Published by the School Board of Dade County

Course Description

9163	48	901889	Building Construction Plans
State Category Number	County Dept. Number	County Course Number	Course Title

Overview: A study of building construction plan reading.

Objectives: Students will demonstrate their ability by making a working drawing of a section of building structure.

Content: A study of reading and applying building construction plans to a projector model, including mathematics.

Selection Consideration: Students in this course will display an interest in the carpentry trade and have a basic knowledge in mathematics.

PREFACE

This first quinmester course outline is designed to acquaint the student with basic skills needed in reading, sketching and drafting building construction plans. It is the first in a series of nine quins.

Students should show an interest in the carpentry trade before being assigned to this course.

The course contains twelve blocks of study. Each block is divided into smaller units for clarification. The twelve blocks contain 135 clock hours of subject matter.

Emphasis will be placed on the actual responsibilities of the carpenter as he relates to the drawing being developed. However, the ability of each student will be considered. As the content of the course varies, the techniques of the teacher must adjust to the situation.

The instructor uses demonstrations and lectures. The learning experience will become more meaningful with the use of textbooks, filmstrips, slides and other instructional materials.

The bibliography in the last pages of this course outline lists the supplementary references and films.

This outline was developed through the cooperative efforts of the instructional and supervisory personnel and the Vocational Curriculum Materials Service, and has been approved by the Dade County Vocational Curriculum Committee.

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with Suggested Hourly Breakdown

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The Carpenter	1
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Methods of Student Evaluation	1
School Regulations and Policies	2
Shop Rules and Procedures	2

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Fires	2
Shop Equipment	2
Shop Dress	2

III. HUMAN RELATIONS (9 hours)

Job Applications	3
Employer-Employee Relations	3
Employee-Employer Relations	3

IV. HISTORY AND ETHICS OF THE TRADE (8 hours)

The Apprenticeship Program	4
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V. INTRODUCTION TO BUILDING CONSTRUCTION (10 hours)

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Commercial Buildings	4
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Residential, One and Two Story 7

X. PROPOSAL DRAWINGS (18 hours)
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XI. WORKING DRAWINGS (15 hours)
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XII. QUINMESTER POST-TEST (2 hours)

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GOALS

The student must be able to demonstrate:

1. An understanding of the need and purpose for building construction plans.

2. The ability to measure thicknesses, widths and lengths of building materials.

3. The ability to develop building construction plans meeting the requirements of the carpenters' trade.

4. The ability to relate building construction plans to the student's construction project.

5. The ability to solve the geometric problems encountered in the carpentry trade.

6. An understanding of the Social Security Act and the benefits of the Workmen's Compensation Insurance.

7. A knowledge of the apprenticeship program.

8. An awareness of the many struggles of the American labor movement.

SPECIFIC BLOCK OBJECTIVES

BLOCK I - ORIENTATION

The student must be able to:

1. State the benefits of this course.
2. Describe the scope of the trade.
3. List the shop rules and procedures.

BLOCK II - SAFETY

The student must be able to:

1. Demonstrate methods of distinguishing a paint or thinner fire.
2. Demonstrate methods of distinguishing an electrical fire.
3. Point out location of fire extinguishers, alarm signal switch and the main electrical shut-off switch.

BLOCK III - HUMAN RELATIONS

The student must be able to:

1. List the basic rules when going for a job interview.
2. Discuss the importance of a healthy relationship with the employer.
3. Discuss the advantages of good relationships with the fellow employees.

BLOCK IV - HISTORY AND ETHICS OF THE TRADE

The student must be able to:

1. Explain the carpentry apprenticeship program.
2. State the general history of the guild system and the life of the apprentice at that time.
3. Demonstrate an understanding of Social Security and the Workmen's Compensation benefits.

BLOCK V - INTRODUCTION TO BUILDING CONSTRUCTION

The student must be able to:

1. List the main objectives of this course.
2. State the school and shop regulations.
3. Explain the advantages of being able to read construction plans.

BLOCK VI - TYPES OF PLANS

The student must be able to:

1. Name three main construction plans.
2. Sketch a floor plan including furniture.
3. Explain the difference between a plot plan and a floor plan.

BLOCK VII - BASIC DRAWING

The student must be able to:

1. State the primary purpose for lettering building construction plans.
2. Explain the purpose of sketching a plan before the formal plan is made.
3. List three objects found in a landscape plan.

BLOCK VIII - APPLIED MATHEMATICS.

The student must be able to:

1. Calculate the square footage of the classroom floor.
2. Calculate the cubic footage of concrete in an ordinary sidewalk.
3. Measure furniture and other objects using the metric system.

BLOCK IX - KINDS OF BUILDINGS

The student must be able to:

1. State the difference between a commercial and residential building.
2. List three kinds of buildings.
3. Name some of the rooms found in a factory.

BLOCK X - PROPOSAL DRAWINGS

The student must be able to:

1. Define a proposal or presentation drawing.
2. State reasons why tracing paper is used for proposal drawings.
3. Sketch a house including shrubs and trees.

BLOCK XI - WORKING DRAWINGS

The student must be able to:

1. Place all major outlines of a floor plan on a sheet of paper.
2. List two reasons why draftsmen should use templates.
3. Name the most important building construction plan of any building.

BLOCK XII - QUINMESTER POST-TEST

The student must be able to:

1. Satisfactorily complete the Quinmester Post-Test.

Course Outline

CARPENTRY - 9163
(Building Construction Plans)

Department 48 - Quin 901889

I. ORIENTATION

A. Course Objectives
   1. General
   2. Specific

B. Student Benefits
   1. Advising and counseling
   2. Learning a trade
   3. Preparing for employment
      a. Oral
      b. Written
      c. Job performance
   4. Assisted in job placement
      a. Instructor
      b. Advisory committee
      c. Lindsey Hopkins
      d. Florida State Employment Service
   5. Foundation for adding additional education

C. The Carpenter
   1. Scope of the trade
      a. Job and duties
      b. Career opportunities
      c. Wage scale
      d. Qualifications for employment
         (1) Educational
         (2) Experience
         (3) Age
         (4) Physical condition
         (5) License
         (6) Recommendations
   2. Trade advantages and disadvantages
   3. Ethics and legal responsibilities

D. Teaching Methods and Techniques
   1. Purpose of lecture
   2. Advantages of demonstrations
   3. Types of audio-visual equipment

E. Methods of Student Evaluation
   1. Performance and attitude regarding school regulations and policies
   2. Safety habits
   3. Oral participation
   4. Performance on written tests

5. Achievement on shop and manipulative job tests
6. Human relations
7. Performance on textbook and related subjects

F. School Regulations and Policies
   1. Expense of course
      a. Texts and workbooks
      b. Audio-visual equipment
      c. Materials
   2. Class roll book
      a. Tardiness
      b. Absences

G. Shop Rules and Procedures
   1. Policy and importance of students reporting accidents
   2. Policy and importance of tool and equipment inventory
      a. General shop equipment
      b. Individual tools issued to student
   3. Procedure of reporting lost, broken and inoperative tools and equipment
   4. Safety rules
      a. Conduct
      b. Work
      c. Use of tools
   5. Clean-up techniques

II. SAFETY

A. Fires
   1. General alarms
      a. Location of fire alarm
      b. Alarm signals relayed from other areas
      c. Procedures for securing shop and evacuating building
   2. Paint and thinner fires
      a. Precautions when handling flammables
      b. Methods of extinguishing flaming liquids
      c. Location and use of fire extinguisher
   3. Electrical fires--shop wiring system
      a. Location of shop master control switch
      b. Precautions to be observed during electrical fires

B. Shop Equipment
   1. Rules regarding use of stationary equipment
   2. Rules for use of portable electric power tools
   3. Importance of safe work practices
   4. Importance of reporting and not using:
      a. Equipment with missing parts
      b. Equipment with damaged electrical cord
      c. Equipment needing repair

C. Shop Dress
   1. Uniforms

2. Shoes
3. Jewelry and accessories

III. HUMAN RELATIONS

A. Job Applications
1. Techniques in requesting appointment
2. Types of application forms
3. Importance of having personal resume information
4. Basic requirements for interview
   a. On time
   b. Personal cleanliness and appearance
5. Courtesy
6. Let the employer lead the conversation
7. Be specific and speak clearly
8. Answer questions specifically
9. Have pen and paper with you
10. Have confidence and self control
11. Be alert for signs of employer terminating interview
12. Express appreciation for interview

B. Employer-Employee Relations
1. Importance of job description
2. Salary
   a. Hourly
   b. Commission
   c. Methods of determining
3. Knowledge of organizational structure of company
   a. Immediate superior
   b. Chain of command
4. Importance of personal appearance
5. Importance of dependability
   a. Punctuality
   b. Notification of absence
6. Cleanliness and organization
7. Importance of keeping abreast of technical changes
8. Intracompany rapport
   a. Be loyal to superior
   b. Be loyal to company
9. Offer suggestions and ideas
   a. Housekeeping
   b. Repairing tools
   c. Repairing or tagging school tools and equipment
   d. Studying factory manuals
   e. Asking superior for work

C. Employee-Employer Relations
1. Importance of cooperativeness
2. Importance of personal cleanliness
3. Importance of housekeeping
4. Importance of procedure when using company tools and equipment
5. Importance of care of facilities

IV. HISTORY AND ETHICS OF THE TRADE

A. Apprenticeship Program
   1. In Europe
      a. Guild system
      b. Room and board
   2. Apprenticeship in America
      a. When started
      b. Accomplishments
   3. Cooperating industries and agencies
      a. Building companies
      b. Chamber of Commerce
      c. Mills and cabinet shops

B. Workmen's Benefits
   1. Social Security
   2. Retirement benefits
   3. Survivor's benefits
   4. Workman's Compensation Laws
      a. Purpose
      b. Provisions of the Florida law
      c. Reporting injuries
   5. Services of the State Employment Service
   6. Organized labor
      a. Cause and need
      b. Accomplishments
      c. American Federation of Labor (A.F.L.)
      d. Congress of Industrial Organizations (C.I.O.)
      e. Independent local unions
   7. United Brotherhood of Carpenters and Joiners of America
      a. Dues
      b. Meetings
      c. Benefits

V. INTRODUCTION TO BUILDING CONSTRUCTION

A. Definition and Purpose
   1. Required information
      a. Location of streets
      b. Location of property line
      c. Location of utilities
   2. Functions of buildings
      a. Family living
      b. Service to public

B. Commercial Buildings
   1. Factory
      a. Kind of service
      b. Size of building
      c. Number of departments
      d. Structure and material
   2. Warehouse
      a. Size of building
      b. Number of storage areas
      c. Service area
      d. Structure and materials

3. Retail store
    a. Kind of business
    b. Size of building
    c. Service and stock sections
    d. Structure and materials
4. Office building
    a. Number of offices
    b. Number of floors
    c. Size of building
    d. Structure and materials
    e. Elevators and fire escapes

C. Residential Buildings
1. One story
    a. Concrete or frame
    b. Family size
    c. Number and size of rooms
    d. Carport or garage
2. Split level or two story
    a. Concrete or frame
    b. Family size
    c. Number and size of rooms
    d. Carport or garage

VI. TYPES OF PLANS

A. City and County Maps
1. Roads
2. Electric power lines
3. Underground pipes

B. Plot
1. Elevation
2. Datum

C. Foundation
1. Earth consistency
2. Elevation
3. Building line

D. Floor
1. Layout of rooms
2. Size of rooms
3. Room relationship
4. Steps, landings and sunken rooms

E. Stairs
1. Style
2. Details
3. Rise and run

F. Door, Window and Room Finish Schedules
1. Symbols
2. Purpose and types
3. Sizes
4. Material

VII. BASIC DRAWING

A. Drawing and Sketching
   1. Oblique
   2. Isometric
   3. Perspective
   4. Orthopraphic

B. Lettering
   1. Legibility
   2. Letter sizes
   3. Guidelines

C. Sketch Planning
   1. Floor plan
   2. Rooms
   3. Further development

D. Landscaping
   1. Trees and shrubs
   2. Fences and walls
   3. Grass or concrete
   4. Patios and walkways

VIII. APPLIED MATHEMATICS

A. English System Measuring
   1. Foot
   2. Inch
   3. Inch fraction
   4. Decimal

B. Metric System Measuring
   1. Meter
   2. Decimeter
   3. Centimeter
   4. Millimeter

C. Area Measure
   1. Wood sheathing
   2. Shingles
   3. Building felt
   4. Wire lath
   5. Concrete blocks
   6. Brick
   7. Building lot
   8. Floor

D. Volume Measure
   1. Foundations
      a. Grade beams
      b. Footings
      c. Pile pads
   2. Columns
   3. Tie beams
   4. Monolithic slabs
   5. Walkways

E. Financial Costs
   1. Hourly
      a. Professionals
      b. Tradesmen
      c. Laborers
      d. Rental machinery and tools
   2. Materials
      a. Concrete
      b. Lumber
      c. Hardware
      d. Fasteners
      e. Tools

IX. KINDS OF BUILDINGS

A. Commercial
   1. Manufacturing
   2. Maintenance and repair
   3. Warehouse
   4. Office building
      a. Interior layout
         (1) Merchandising area
         (2) Working area
         (3) Storage area
         (4) Utility room
         (5) Office space
         (6) Wash room
         (7) Stairs
         (8) Elevators
      b. Exterior layout
         (1) Ramps
         (2) Stairs
         (3) Walkway

B. Residential, One and Two Story
   1. Entry
   2. Living room
   3. Dining area
   4. Bedroom
   5. Bathroom
   6. Utility room
   7. Closets
   8. Stairs

X. PROPOSAL DRAWINGS

A. Floor Plan
   1. Overall dimensions
   2. Room sizes
   3. Furniture and equipment
   4. Scale of drawing
   5. North arrow

B. Exterior Elevations
   1. Front
   2. Shrubs and trees
   3. Human figures
   4. Shadows

C. Plot Landscaping
   1. Walk-ways
   2. Fences and screens
   3. Street

D. Cross-section
   1. Plate heigth
   2. Beam and rafter sizes
   3. Roof pitch

E. Interior Elevations
   1. Important wall locations
   2. Shelving, planters and fire place

F. Exterior and Interior Perspectives
   1. Entrance
   2. Important features

G. Relationships Between Drawings

XI. WORKING DRAWINGS

A. Specifications
   1. Legal documents
   2. Conditions
   3. Technical description

B. Structure Dimensions
   1. Foundation
      a. Concrete forms
      b. Steel reinforcement
   2. Floor
      a. Framing plan
      b. Concrete slab
   3. Walls
      a. Framing plans
      b. Concrete blocks
      c. Poured concrete
   4. Columns
   5. Roof
      a. Framing plan
      b. Trusses
      c. Prestress
      d. Concrete slab
   6. Window and door schedules

7. Stairs
   a. Wood
   b. Concrete
   c. Steel

XII. QUINMESTER POST TEST

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A P P E N D I X

QUINMESTER POSTTEST SAMPLE

Quinmester Posttest

Name _____ Date _____ Score _____

Multiple Choice Test Items

____ 1. Buildirg construction plans are finally drawn by the:

a. Estimator
b. Designer
c. Carpenter
d. Draftsman
e. Architect

____ 2. In what building category would a warehouse fit?

a. Residential
b. Enterprise
c. Commercial
d. Plot
e. Framing

____ 3. The term "elevation" means:

a. Level
b. Height
c. Foundation
d. Datum
e. Ground

____ 4. City and county utilities maps include:

a. Floor plan
b. Sewer pipes
c. Cross sections
d. Ramps
e. Slabs

____ 5. A "plot plan" shows:

a. Stairs
b. Rooms
c. Schedules
d. Trees
e. Furniture

____ 6. A "foundation plan" locates:

a. Windows
b. Interior walls
c. Studs
d. Footings
e. Walkways

_____7. A "floor plan" gives the size of:

a. Rugs
b. Furniture
c. Closets
d. Lumber
e. Hardware

_____8. A "cross section plan" shows the height of:

a. Walkways
b. Shrubs
c. Windows
d. Sole plate
e. Shingles

_____9. A "window and door schedule" indicates:

a. Color
b. Time
c. Size
d. Quality
e. Direction

____10. "Framing" refers to the:

a. Structure
b. Material
c. Pictures
d. Floor
e. Blocks

____11. A person learning a trade is referred to as:

a. a learner
b. journeyman
c. an apprentice
d. a carpenter

____12. The American Federation of Labor is a (an):

a. Labor organization
b. Employer's organization
c. State federation
d. Federal federation

____13. "Social Security" was originally enacted by the:

a. Congress
b. Senate
c. Unions
d. Business

____14. The first national labor organization was the:

a. C.I.O.
b. Carpenter's union
c. Brotherhood
d. A.F.L.

____15. The A.F.L. later merged with the:

a. Joiners
b. C.I.O.
c. Carpenters
d. Electricians

____16. The overall purpose of organized labor is to:

a. Raise wages.
b. Improve conditions
c. Educate foremen
d. Protect and represent

____17. Wood ladders should never be:

a. Carried.
b. Sanded
c. Oiled
d. Painted

____18. Safety precautions are a product of:

a. Common sense
b. State laws
c. Superintendents
d. Apprenticeship program

____19. A portable electric circular saw should be handled with a:

a. Glove
b. Loose hand
c. Firm grip
d. Free stroke

____20. Scaffolds should require a:

a. Railing
b. Stud
c. Painting
d. Law

ANSWER KEY TO QUINMESTER POST-TEST

1. d
2. c
3. b
4. b
5. d
6. d
7. c
8. c
9. c
10. a
11. c
12. a
13. a
14. d
15. b
16. d
17. d
18. a
19. c
20. a